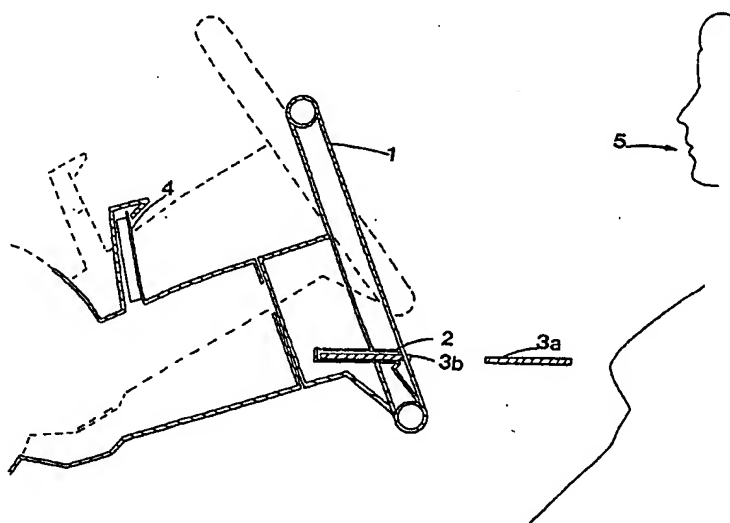




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/SE99/02336 (22) International Filing Date: 14 December 1999 (14.12.99) (30) Priority Data: 9804469-6 21 December 1998 (21.12.98) SE (71) Applicant (for all designated States except US): AB VOLVO [SE/SE]; S-405 08 Göteborg (SE). (72) Inventors; and (75) Inventors/Applicants (for US only): LARSSON, Göran [SE/SE]; Gamla Lillebyvägen 9A, S-423 54 Torslanda (SE). GUNNARSON, Anders [SE/SE]; S. Viktoriagatan 27, S-411 25 Göteborg (SE). LAMARRE, Simon [SE/SE]; Violblommegatan 17, S-426 68 V. Frölunda (SE). REIKERÅS, Karin [SE/SE]; Prinsgatan 10, S-413 05 Göteborg (SE). REIKERÅS, Kjell [SE/SE]; Färgaregatan 11, S-411 11 Göteborg (SE). LENNARTSSON, Einar [SE/SE]; Pl 142 Magra, S-466 92 Sollebrunn (SE). THORSSON, Birgitta [SE/SE]; Östra vägen 43, S-432 35 Varberg (SE). BERGQVIST, Åke [SE/SE]; Algatan 17, S-426 77 V. Frölunda (SE). (74) Agents: WILLQUIST, Bo et al.; Willquist & Partners Patent-byrå AB, Platensgatan 9C, S-582 20 Linköping (SE).	(81) Designated States: JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  Published With international search report. In English translation (filed in Swedish).	

(54) Title: ARRANGEMENT AT A MOTOR VEHICLE



## (57) Abstract

The present invention relates to an arrangement in a motor vehicle, which has a device (1) at least vertically adjustable to a driving position for controlling the vehicle. The arrangement is characterised in that the control device (1) has a parking position, in which the vehicle cannot be driven and there is no operative connection for starting, accelerating or braking the vehicle etc. from the operating controls of the vehicle. The control device (1) is furthermore designed to be released from the parking position by means of an authorisation verification element (3a, 3b), for adjustment of the driving position. In the driving position an operative connection is established between the operating control elements of the vehicle and corresponding actuating elements.

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### Arrangement at a motor vehicle

The present invention relates to an arrangement in a motor vehicle, which has a device, height-adjustable to a driving position, for controlling the vehicle.

5 It is now common for passenger cars to have the facility for adjustment of a personal driving position, both the length of the steering column and its rake and lateral position being adjustable, following which the steering column is locked in this position. The object of this is to provide a comfortable driving position for the driver of the vehicle.

10 An object of the present invention is to improve the safety and comfort in a motor vehicle of the above-mentioned type.

This object is achieved by means of the characteristic features set out in the characterising part of the main claim.

15

The arrangement according to the invention has a number of advantages over the prior art. Among other things, it allows plenty of space for getting into and out of the driver's seat, since when it is in the parking position the steering wheel is located so that it does not impinge upon the space that is required for getting into and out of the vehicle comfortably. In addition the arrangement is very easy and cheap to implement in those electric and hybrid vehicles in which the control signals to and from the actuating elements of the vehicle are electrical. This also applies to electrical control of vehicles of the steer-by-wire type. The arrangement according to the invention also provides a simple method of preventing vehicle thefts.

25

Further advantages of the invention will be apparent from the subordinate claims and from the following description with reference to the drawings, in which:

30 Fig 1. shows a diagrammatic side view of a vehicle steering wheel in the parking position and in the driving position respectively,

Fig 2. shows a perspective view of the steering wheel with a docking part for a smartcard and

Fig 3. is a block diagram, which illustrates the interaction between the parking position and the driving position of the steering wheel and the operating control devices and actuating elements of the vehicle.

5 In figure 1 the reference number 1 denotes a device, at least vertically adjustable to an individual driving position, for controlling a motor vehicle. In one embodiment the control device 1 takes the form of a steering wheel. The steering wheel 1 has a parking position, which in figure 1 is marked by the dashed lines. In the parking position the vehicle cannot be driven, and there is no operative connection for  
10 starting, accelerating or braking the vehicle etc. from the operating controls of the vehicle. The vehicle therefore has no power. The parking position of the steering wheel 1 is a raised position, which makes it easier for a person to get into and out of the vehicle. The steering wheel 1 is designed to be released from the parking position by means of an authorisation verification element 3a, 3b and moved to a  
15 lowered driving position, which is individually adjustable in that a lowering movement stop is adjustable. In this area many ways of achieving this stop will be obvious to the person skilled in the art. In one embodiment the steering wheel 1 is moved into the driving position manually. The authorisation verification element will be described in more detail later. The individual adjustment position, the solid line in  
20 figure 1, may be stored on the authorisation verification card or in a memory in the vehicle control unit, the adjustment being linked to an authorisation code stored on the card. Alternatively other data may be stored on the card, such as seat adjustments. In one embodiment an operative connection is established between the operating control elements of the vehicle and corresponding actuating elements when the  
25 steering wheel is released from the parking position. In another embodiment the connection is established only after the steering wheel 1 is located in the individual position.

30 The steering wheel 1 has a docking part 2 located adjacent to its hub for receiving the authorisation verification element 3a, 3b. In one embodiment the authorisation verification element is a so-called smartcard. In figure 1 the said smartcard is seen in two positions, where in a first position the card is not docked, this position being marked by the reference number 3a (the steering wheel in parking position), and in a second position the card is docked in the docking part 2, this position being marked  
35 by the reference number 3b (steering wheel in driving position). The card 3a, 3b has an individual identity or code specific to the motor vehicle. In this way the steering wheel is retained in the parking position when a card is inserted into the docking part 2 that has an identity which does not match that of the vehicle. The docking part 2

has, for example, a spring-loaded arrangement of conventional type, so that when the card is pushed in it holds the card in the part 2 and when the inserted card is pressed it ejects the card.

- 5 According to a preferred embodiment the docking part 2 is located on the front face of the steering wheel hub and in another embodiment on the side of the steering wheel unit.

- 10 A display unit 4 is arranged adjacent to the steering wheel 1. The display unit 4 is designed to be activated in the individual adjustment position and shows relevant data for driving the vehicle.

- 15 Figure 2 shows how the steering wheel 1 might be designed in one embodiment. The said smartcard is denoted by the reference number 3 and, as in figure 1, the docking part is denoted by the reference number 2.

- 20 In figure 3 reference number 6 denotes, in particular, an electrical control unit for controlling, among other things, the connection between the operating control elements of the vehicle and the corresponding actuating elements on the basis of signals from the docking part and an influencing element 7. The control unit 6 is designed to detect the signals from the docking part 2, which indicate whether a smartcard is docked in the docking part and whether the identity of the said smartcard matches the identity of the vehicle. This information is preferably coded, making it impossible to reveal the identity of the vehicle by interrogating the control unit.

- 25 Until such time as a smartcard with the same identity as that of the vehicle is inserted in the docking part, the steering wheel is locked in the parking position, as described above. This is achieved in that the control unit 6 supplies a signal to the element 8 in order to keep the steering wheel in the locked parking position. When a smartcard  
30 with the correct identity is docked in the docking part 2, the control unit indicates to the locking element 8 that locking in the parking position is to cease. The steering wheel can then be moved for adjustment to the individual driving position for the driver. The driver can adjust the position and move the steering wheel to a desired individual driving position. In one embodiment the driver confirms by way of an  
35 influencing element 7 that the steering wheel is now adjusted to the said individual driving position, as a result of which the control unit stores the said adjustment and sends a locking signal to elements 13 designed to lock the steering wheel in the driving position selected by the driver. In another embodiment there is, for example,

a knob for manually locking the steering wheel in the driving position. In this embodiment the knob may act as combined influencing element 7 and locking element 13.

- 5      Regardless of what form the influencing element 7 and the locking element 13 take, once confirmed by way of the influencing element 7, operating control elements of the vehicle, such as an element 9 for starting the vehicle, an accelerator pedal 10 and a brake pedal 11, are connected to corresponding actuating elements. In one  
10      embodiment the control element 6 is designed to control the vehicle parking brake  
12, so that this is activated in the parking position and not activated in the individual driving position.

When he has finished driving, the driver takes his smartcard out of the docking part 2, whereupon the control unit is designed, by way of the locking element 8, to move  
15      the steering wheel 1 into the parking position.

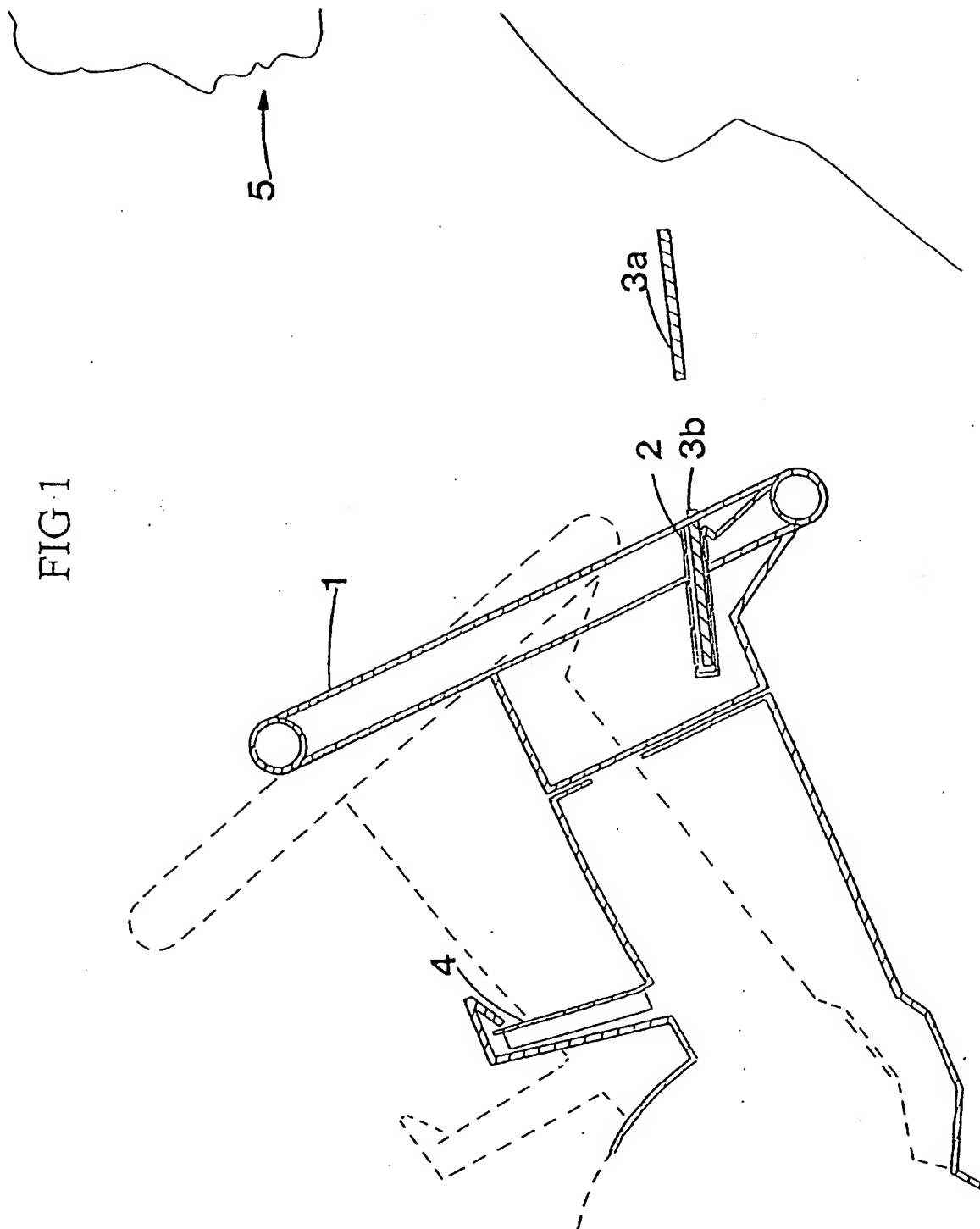
As described above, the said smartcard has an identity unique to the said vehicle. Consequently there may be multiple copies of the said smartcard in the same way that one has multiple sets of keys for the ignition lock of a vehicle at present. The  
20      said smartcard might also be provided with means allowing it to be used for locking the vehicle doors. With an electrical, sensing locking system at least one door of the vehicle could be automatically unlocked when a smartcard with an identity corresponding to the identity of the vehicle is within a certain distance defined by the detection radius of the locking system. An embodiment might also be envisaged in  
25      which the said smartcard is personal. In this case the card might contain information, among other things, on how the cardholder wishes to have information presented on the display 4 or data for automatic adjustment to the individual driving position.

Claims

1. Arrangement in a motor vehicle, which has a device (1), at least vertically adjustable to a driving position, for controlling the vehicle, **characterised in that** the control device (1) operates electrically and has a parking position, in which the vehicle cannot be driven and there is no operative connection for starting, accelerating and braking the vehicle etc. from the operating control elements (9, 10, 11) of the vehicle, that the control device (1) is designed to be released from the parking position by means of an authorisation verification element (3a, 3b; 3) and to assume the driving position, and that in the driving position an operative connection is established between the operating control elements (9, 10, 11) of the vehicle and corresponding actuating elements.
2. Arrangement according to claim 1, **characterised in that** the driving position is individually adjustable.
3. Arrangement according to either of the preceding claims, **characterised in that** the control device (1) is a steering wheel and the said authorisation verification element (3a, 3b; 3) is a so-called smartcard, for which there is a docking part (2) adjacent to the hub of the steering wheel.
4. Arrangement according to claim 3, **characterised in that** the docking part (2) is arranged on the front face of the steering wheel hub.
5. Arrangement according to claim 3, **characterised in that** the docking part (2) is arranged on the side of the steering wheel hub.
6. Arrangement according to claim 1, **characterised in that** the parking position of the control device is a raised position, which makes it easier to get in and out of the vehicle
7. Arrangement according to claim 1, **characterised in that** the arrangement comprises a display unit 4, which is designed to be activated in a driving position and to show relevant data for driving of the vehicle.
8. Arrangement according to claim 1, **characterised in that** in the parking position of the control device (1) the vehicle parking brake (12) is activated.

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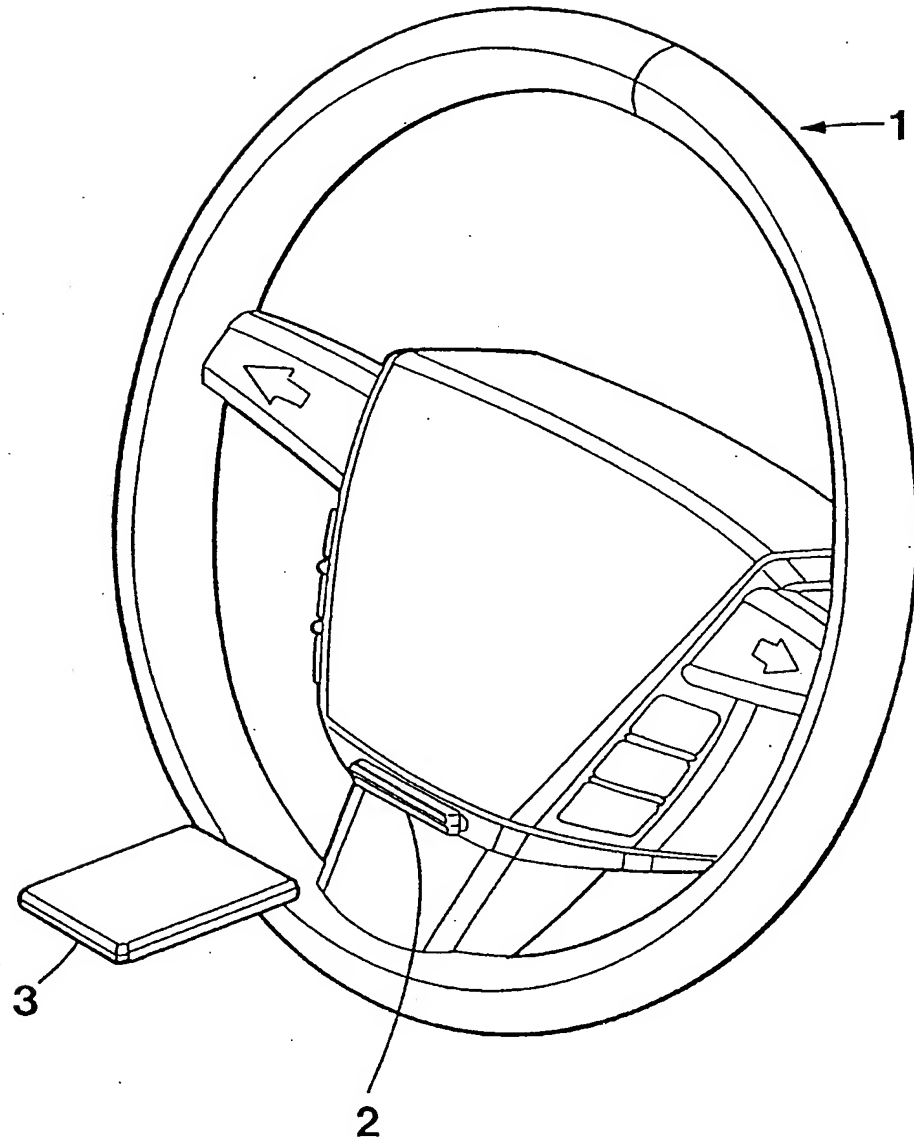
FIG 1





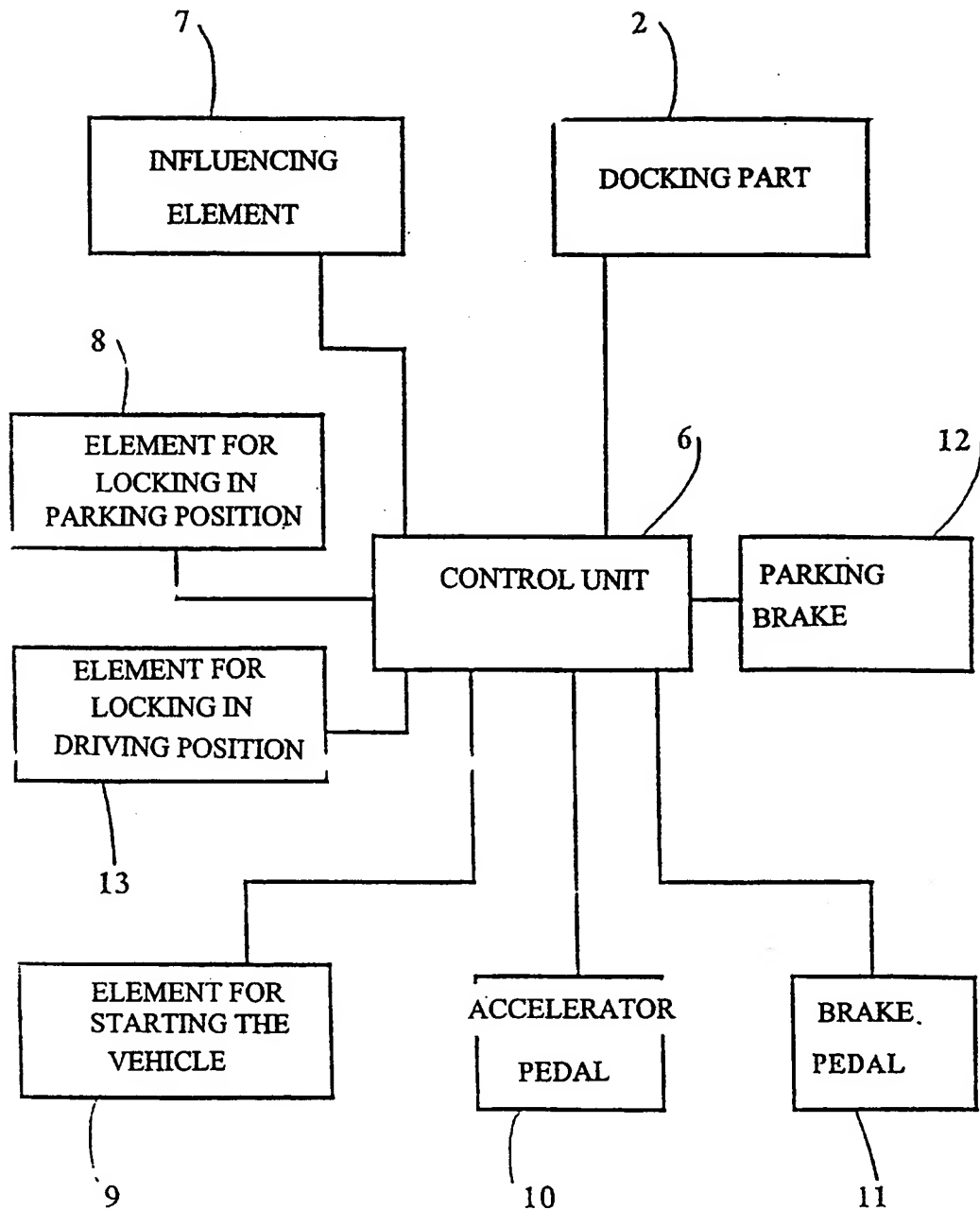
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FIG 2



3/3

FIG 3



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 99/02336

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B60R 25/02, B60R 25/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0697325 A2 (LEOPOLD KOSTAL GMBH & CO. KG), 21 February 1996 (21.02.96), column 2, line 26 - column 4, line 22, figure 6	1,2,6,7
Y	--	3-5,8
X	WO 9701476 A1 (ROBERT BOSCH GMBH), 16 January 1997 (16.01.97), page 4, line 8 - page 6, line 12, figure 1	1,6
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Further documents are listed in the continuation of Box C.



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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X	DE 3308803 A1 (ERNST, HANS-HELLMUT), 13 Sept 1984 (13.09.84), page 12, line 10 - line 31, figures 1, 2, abstract	3-5,8
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Information on patent family members

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